

Scientists create blood vessel cells from stem cells

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New York Stem Cell Foundation (NYSCF)-Druckenmiller Fellow, Daylon James, PhD, of Weill Cornell Medical College, is lead author on a study defining conditions for generating a plentiful supply of endothelial (vessel lining) cells that are suitable for therapeutic use. Dr. James and his colleagues created a human embryonic stem cell (hESC) "reporter" line that can be used to measure endothelial cell production and activity.

The study, Expansion and maintenance of human embryonic stem cell-derived endothelial cells by TGF β inhibition is Id1 dependent, was published in the online edition of *Nature Biotechnology* on January 17th, 2010, and will also appear in the journal's print edition. In addition to Dr. James, whose work is funded by NYSCF, contributors to the study also included NYSCF-Druckenmiller Fellows, Drs. Gabsang Lee and Marco Seandel.

Using the reporter line, Dr. James and his colleagues were able to monitor the emergence of endothelial cells in live cultures, and screen for small bioactive molecules that increased their yield. By this method, they were able to indentify a compound that robustly increased the amount of endothelial cells produced. This work establishes a standard methodology for generating functional endothelial cells from hESCs using conditions that are suited to clinical application. These cells can now be routinely and economically produced on scales that make pre-clinical assessment of their efficacy practical in large animal models of vascular disease.

"We are very proud of Dr. James. These findings bring us closer to having functional [endothelial cells](#) available for studying vascular disease," says Susan L. Solomon, NYSCF's founder and CEO.

As advancements in induced pluripotent stem (iPS) cell technology continue, hESC research like that of Dr. James is essential for the field of stem cell research. [Embryonic stem cells](#) are still the gold standard for monitoring pluripotency and differentiation capabilities.

"It is research like this that brings us closer to cures for the major diseases of our time," said Dr. Kevin Eggan, Chief Scientific Officer of NYSCF. "Daylon is one of the premier young scientists in the field of stem cell research and we are excited to have him in our fellowship program."

Provided by New York Stem Cell Foundation

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